

CLAIMS

1. A skin test method for predicting the formation of spots, comprising: judging skin to be susceptible to the formation of spots in the case expression of Monocyte Chemoattracting Protein 2 (MCP2) in epidermis is increased as compared with normal expression in the epidermis.

5 2. A method according to claim 1, wherein the formation of spots is caused by UVB radiation.

10 3. A method according to claim 1 or 2, wherein the increase in the expression of MCP2 in epidermis is determined by measuring the amount of MCP2 in the epidermis.

15 4. A method according to claim 3, wherein the measurement is carried out by ELISA or RIA using antibody specific to MCP2.

20 5. A method according to any of claims 1 to 4, wherein the increase in the expression of MCP2 in the epidermis is determined by measuring the amount of mRNA encoding MCP2 extracted from the epidermis.

6. A method according to claim 5, wherein the measurement of the mRNA is carried out by a polymerase chain reaction method.

25 7. A method for screening for a spot formation inhibitory factor and/or spot removal factor, comprising the steps of evaluating a candidate compound for the ability to inhibit the expression and/or activity in the epidermis of MCP2, and selecting an MCP2 inhibitor having this inhibitory ability as a spot formation inhibitory factor and/or spot removal factor.

30 8. A method according to claim 7, wherein the method further comprises application of the MCP2 inhibitor having inhibitory ability to a spot formation model animal, and selecting an inhibitor that has a spot formation inhibitory effect and/or spot removal effect.

35 9. A skin test method for predicting the formation of spots, comprising the steps of judging skin to be

susceptible to the formation of spots in the case the expression in the epidermis of a polynucleotide consisting of the base sequence shown in SEQ. ID NO. 2 (human FLJ21763 gene) or a polynucleotide capable of hybridizing thereto under highly stringent conditions, a polynucleotide capable of hybridizing under highly stringent conditions to a polynucleotide consisting of the base sequence shown in SEQ. ID NO. 1 (mouse AK012157 gene), or a polynucleotide capable of hybridizing under highly stringent conditions to a polynucleotide consisting of the base sequence shown in SEQ. ID NO. 3 (rat S74257 gene), is increased as compared with normal expression in the epidermis.

10. A method according to claim 9, wherein the formation of the spots is caused by UVB radiation.

15. A method according to claim 9 or 10, wherein the increase in the expression of the polynucleotides in the epidermis is determined by measuring the amount of mRNA complementary to said polynucleotides extracted from the epidermis.

20. A method for screening for a spot formation inhibitory factor and/or spot removal factor, comprising the steps of evaluating the ability of a candidate compound to inhibit the expression in the epidermis of a polynucleotide consisting of the base sequence shown in SEQ. ID NO. 2 (human FLJ21763 gene) or a polynucleotide capable of hybridizing thereto under highly stringent conditions, a polynucleotide capable of hybridizing under highly stringent conditions to a polynucleotide consisting of the base sequence shown in SEQ. ID NO. 1 (mouse AK012157 gene), or a polynucleotide capable of hybridizing under highly stringent conditions to a polynucleotide consisting of the base sequence shown in SEQ. ID NO. 3 (rat S74257 gene), and selecting an inhibitor having the inhibitory ability as a spot formation inhibitory factor and/or spot removal factor.

25. A method according to claim 12, wherein the

method further comprises application of the inhibitor having the inhibitory ability to a spot formation model animal to select an inhibitor having a spot formation inhibitory and/or spot removal effect.

5 14. A skin test method for predicting the formation of spots, comprising the steps of judging skin to be susceptible to the formation of spots in the case expression in the epidermis of a gene encoding a protein selected from the group consisting of Mcp9 (small inducible cytokine B subfamily (Cys-X-Cys), member 9), Mcp10 (small inducible cytokine B subfamily (Cys-x-Cys), member 10), Isg15 (Interferon-stimulated protein (15 kDa) isg15 (Ubiquitin-like)), Usp18 (ubiquitin specific protease 18), Oas12 (2'-5'-oligoadenylate synthase-like 15 OASL2 (IFN induced)), Gbp2 (IFN induced guanylate nucleotide binding protein 2 gbp2 (antivirus)), Gtpi (GTPase; interferon-g induced GTPase (19440)), Ifi47 (interferon gamma inducible protein, 47 kDa (GTP-binding motif)), Igtp (GTPase; interferon gamma induced GTPase 20 igtp) and Tgtp (GTPase; T-cell specific GTPase (IFN gamma)), is increased as compared with normal expression in the epidermis.

25 15. A skin test method for predicting the formation of spots, comprising the steps of judging skin to be susceptible for the formation of skin spots in the case expression in the epidermis of a gene encoding a protein selected from the group consisting of Sprr2A (small proline-rich protein 2A), Krt2-6b (keratin complex 2, basic, gene 6a), Cdk5rap2 (CKK5 regulatory subunit 30 associated protein 2), Mef2C (myocyte enhancer factor 2C), Gsta4 (glutathione S-transferase, alpha 4), Osf2 (osteoblast specific factor (facilin I-like)), Tnc (Tenascin C), Igfbp6 (Insulin-like growth factor binding protein 6) and Ppicap (peptidylprolyl isomerase C 35 (cyclophylin C)-associated protein), is increased as compared with normal expression in the epidermis.

16. A skin test method for predicting the formation

of spots that judges skin to be susceptible to the formation of spots in the case expression of MCP-6 (mast cell protease 6) protein is increased as compared with normal expression in the epidermis.

5 17. A method according to any of claims 14 to 16, wherein the formation of spots is caused by UVB radiation.

10 18. A method according to any of claims 14 to 17, wherein the increase in the expression of the genes in the epidermis is determined by measuring the amount of the mRNA that encodes the proteins extracted from the epidermis.

15 19. A method for screening for a spot formation inhibitory factor and/or spot removal factor comprising the steps of evaluating the ability of a candidate compound to inhibit expression of the genes defined in any of claims 14 to 16 and/or the activity of the protein products of said genes, and selecting an inhibitor having that inhibitory ability as a spot formation inhibitory factor and/or spot removal factor.

20 20. A method according to claim 19, wherein the inhibitor having the inhibitory ability is applied to a spot formation model animal to select an inhibitor having a spot formation inhibitory and/or spot removal effect.

25 21. A skin test method for predicting the formation of skin spots that judges skin to be susceptible to the formation of skin spots in the case the expression in the epidermis of a polynucleotide capable of hybridizing under highly stringent conditions to a polynucleotide consisting of the base sequence shown in SEQ. ID NO. 1 (Mm. 74656) is increased as compared with normal expression in the epidermis.

30 22. A method according to claim 21, wherein the formation of spots is caused by UVB radiation.

35 23. A method according to claim 21 or claim 22, wherein the increase in the expression of the polynucleotide in the epidermis is determined by

measuring the amount of mRNA complementary to that polynucleotide extracted from the epidermis.

24. A method for screening for a spot formation inhibitory factor and/or spot removal factor, comprising
5 the steps of evaluating the ability of a candidate compound to inhibit the expression in the epidermis of a polynucleotide capable of hybridizing under highly stringent conditions with a polynucleotide consisting of the base sequence shown in SEQ. ID NO. 1 (Mm. 74656), and
10 selecting an inhibitor having the inhibitory ability as a spot formation inhibitory factor and/or spot removal factor.

25. A method according to claim 24, wherein the inhibitor having the inhibitory ability is applied to a
15 spot formation model animal to select an inhibitor having a spot formation inhibitory and/or spot removal effect.